Highlighting the Army's Chemical Demilitarization Program

Reach

Pueblo
Summer 2002

Contact Us

Make a note...

New outreach office location and contact numbers

Pueblo Chemical Depot Community Outreach Office
301 North Main Street
Suite 306B
Pueblo, CO 81003
Phone: (719) 546-0400
Fax: (719) 546-0409

Outreach Office Hours
Monday–Friday
8:30 a.m.–5 p.m.
Other hours by appointment

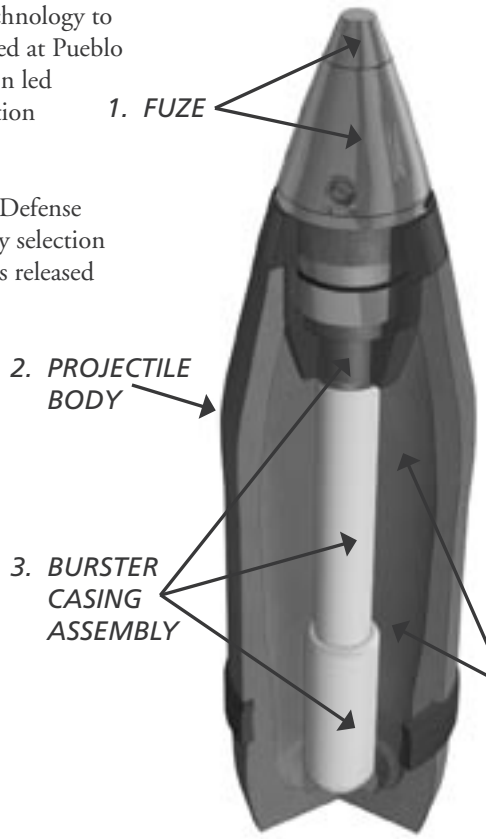
Outreach Office Staff
(719) 546-0400

Pueblo Chemical Depot Public Affairs Officer
(719) 549-4135

U.S. Army Program Manager for Chemical Demilitarization
PMCD

Weapons disposal technology finalized

For years, the Army and the Pueblo community worked together to select a safe technology to destroy the chemical weapons stored at Pueblo Chemical Depot. This coordination led to the identification of "neutralization followed by biotreatment" as the preferred disposal technology. On July 18, 2002, Under Secretary of Defense Pete Aldridge made this technology selection official. A Request for Proposal was released on July 26, 2002 to seek bids from contractors to develop and operate the Pueblo chemical weapons disposal facility. Once a systems contractor is selected, the contractor will have some flexibility in determining specific aspects of the disposal process.



1. *The FUZE contains energetics (explosives), which trigger the burster.*
2. *The PROJECTILE BODY is the outer shell of the projectile.*
3. *The BURSTER CASING ASSEMBLY holds the burster, which is the energetic matter that ruptures the shell. This process also atomizes the liquid mustard agent, creating a vapor cloud.*
4. *The AGENT CAVITY is the sealed area within the projectile where the liquid agent is held.*

Diagram of a mustard agent projectile. The burster is contained completely within the burster casing assembly, so it does not come into contact with the mustard agent. This allows the burster to be removed without becoming contaminated.

What is neutralization followed by biotreatment?

Often referred to as "neut/bio" or the "bug method," this technology will use hot water to neutralize chemical agent and microbes to "eat" the resulting hydrolysate. Actually, the science of using microbes to help in disposing of hazardous waste has existed for decades, and the process occurs in nature all the time. Sewage treatment facilities across the country use microbes every day to help break down raw sewage. The Army also is using neut/bio for disposing of mustard agent stored at Aberdeen Proving Ground in Maryland.

In addition to the hot water and microbes, skilled workers and sophisticated robots will ensure the safe destruction of Pueblo's chemical weapons stockpile. What follows is a step-by-step explanation of the neut/bio process. These steps may be modified by the systems contractor with government oversight.

The neut/bio process

Step One: Removing the Explosives

Robotic equipment will remove the weapon's explosive parts including the fuze and the burster (see diagram above). Removing the explosive parts first makes the remaining processes safer. The explosives in the burster will be washed out using pressurized water or by soaking in a bath of water and caustic solution. This water and explosive mixture will be further processed in Step Three. Metal parts, including fuzes that contain very small amounts of explosives, will be disposed of in Step Five.

continued on page 2 ...

ACWA

Congress created the Assembled Chemical Weapons Assessment (ACWA) program in 1997 to study technologies other than incineration for disposing of assembled chemical weapons. ACWA recently completed that mission and demonstrated that neut/bio is a viable technology for destroying Pueblo's chemical stockpile.

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Step Two: Removing the Mustard Agent

Once the explosive parts are removed, the weapon body containing chemical agent will be processed. The agent will be removed by accessing the body and washing it out with pressurized water. This also can be done by freezing the body and fracturing it with a press then soaking the metal pieces in water to separate the agent.

Step Three: Neutralizing the Energetics and Mustard Agent

After the energetics and agent have been separated from the metal parts, they will be treated in separate tanks with a water and caustic solution. What results from this process is called hydrolysate. The energetics hydrolysate and agent hydrolysate are then combined and further processed in Step Four.

Step Four: Biotreatment

The hydrolysates generated in Step Three will go through the biotreatment process, which consists of large tanks containing microbes that digest and further break down the solution. Water released from the process will be recycled, leaving various salts and biosludge. Biosludge, which is made up of microbe waste products and dead microbe matter, will be dried and shipped off-site to a treatment, storage and disposal facility.

Step Five: Disposing of the Metal Parts

The final step of the destruction process is treating the weapon's metal parts. Although the metals were cleansed of agent in Step One, they still may contain agent and need to be decontaminated to a higher level. This level is called "5X," a military standard of decontamination that ensures the metal is clean and safe for reuse. To reach this level of decontamination, the metals will be heated to 1,000 degrees Fahrenheit for 15 minutes. The metal then can be recycled.

For more information about neut/bio technology, please contact the outreach office at (719) 546-0400.

Army and ACWA investigating ways to accelerate disposal

The Sept. 11, 2001, terrorist attacks prompted the Army to look at ways of accelerating the disposal process in Pueblo. The neut/bio technology explained in the cover story will be used to destroy the chemical weapons, but programmatic and processing changes are being considered to enable an accelerated schedule.

Programmatic changes include accelerating the contracting process to get a systems contractor in place as soon as possible. Discussions also are on going with the state and community to find ways of accelerating the permitting process. To accelerate the neut/bio process, the early use of enhanced reconfiguration (the complete separation of energetics from the weapon) is being considered.

Additionally, the Army and ACWA are considering shipping the energetics and/or hydrolysate off-site to existing facilities for disposal. They also are investigating shipping uncontaminated wooden pallets off-site, as well as decontaminated demilitarization protective ensembles—special protective clothing worn by workers when around chemical agent. The Army has an excellent track record of shipping such items safely.

These options are being coordinated with the state and the community to determine the most appropriate path forward to expedite the destruction of the stockpile at Pueblo. These steps would result in a shorter construction schedule to expedite destruction of the Pueblo stockpile.

Environmental Impact Statements available

The two documents listed below are available in executive summary, hard copy or CD-ROM. To receive a copy, contact the outreach office at (719) 546-0400.

- Program Manager for Chemical Demilitarization's Final Environmental Impact Statement for the Destruction of Chemical Munitions at Pueblo Chemical Depot.
- Program Manager for Assembled Chemical Weapons Assessment's Final Environmental Impact Statement for the Design, Construction and Operation of One or More Pilot Test Facilities for Assembled Chemical Weapons Destruction Technologies at One or More Sites.

Prolonged storage has deteriorated some mustard agent

From lessons learned at the Army's first chemical weapons disposal facility located on Johnston Island in the Pacific, prolonged storage occasionally has caused mustard agent to separate in some weapons and harden in others.

Like many industrial chemicals, the Army produced its chemical weapons in batches or "lots." Some of the weapons stored in Pueblo come from the same lots as those on Johnston Island that "frothed" when opened—similar to a can of soda fizzing. This unanticipated occurrence contaminated the facility's equipment. In addition, some of the mustard agent on Johnston Island had hardened, creating a firm, gelatin-like "heel" at the bottom of the weapons that was difficult to remove.

Because it is possible that these conditions may be discovered when processing mustard agent at the Pueblo facility, the design of the neut/bio process will take this into consideration. The weapons can be frozen, which solidifies the agent and prevents frothing. The weapons then can be fractured using a high force press, and the pieces can be soaked in a water bath to remove the agent. The munitions also can be accessed in equipment designed to contain the frothing agent, leaving the remaining agent to be washed out using a water spray. The neut/bio process then would continue as described on pages one and two.

The Army will work closely with the Pueblo facility's systems contractor, environmental regulators and the community to identify safe methods to access deteriorated mustard agent.

When mustard agent originally was inserted into weapons and storage containers in the 1950s, it was a clear, thick liquid. Prolonged storage has corroded the agent into a brown substance that resembles molasses, as seen in the laboratory container pictured above.

Stay informed—Stay involved!

Calendar of upcoming meetings and events:

- **Colorado Citizens' Advisory Commission meeting**
  Sept. 5, Pueblo Convention Center
- **Pueblo Chemical Depot Community Outreach Office booth at the Chili and Frijoles Festival**
  Sept. 20–22, Union Avenue District/Historic Arkansas Riverwalk
- **Colorado Working Integrated Product Team meeting**
  Early October, date and location to be announced
- **Agricultural Assessment Working Group meeting**
  Late October or early November, date and location to be announced

The outreach office sends a weekly e-mail that lists upcoming meetings and events pertaining to chemical weapons disposal in Pueblo. If you would like to receive this weekly e-mail, please contact the outreach office at (719) 546-0400.

Mustard Agent Quick Fact

Contrary to common thought, mustard agent is not a gas. It is a thick liquid that resembles molasses. Mustard is a blister agent that was designed to inflict chemical burns on enemy troops. The purpose was to cause injury, not death. The U.S. Army never used its chemical stockpile and is working to destroy these aging weapons safely.

REACH ABCs

Below is a list of all the acronyms used in this issue of the REACH newsletter:

- ***ACWA*** *Assembled Chemical Weapons Assessment*
- ***CAC*** *Citizens' Advisory Commission*

Reach

We want to hear from you ...

The Pueblo Chemical Depot Community Outreach Office serves as a clearinghouse of information concerning the Army's plans for chemical weapons disposal in Pueblo. Together with the depot's Public Affairs Office, the outreach office coordinates a variety of events designed to keep the community informed and involved.

If you would like more information about the opportunities available through the Pueblo Chemical Depot Community Outreach Office, please call (719) 546-0400, or return this form by mail to:

Pueblo Chemical Depot Outreach Office
301 North Main Street, Suite 306B
Pueblo, CO 81003

Please check the boxes that interest you:

- ❑ I would like to be added to the depot's free mailing list.
- ❑ I would like to receive a free information packet in the mail.
- ❑ I would like to learn more about arranging a free presentation for my club/organization/school/workplace.
- ❑ Other_____

If you checked any of the boxes, please complete the following:

Name_____

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